AMENDMENT TO THE SPECIFICATION

Replace the Title with:

High throughput high-yield vacuum deposition system ~~for thin film based dense wavelength division multiplexers~~

Replace the Abstract with:

A vacuum deposition system has been designed which increases deposition process yield and throughput. The system may be used, for example, to produce thin film based demultiplexers with high throughput and production yields of greater than 25% for use in Dense Wavelength Division Multiplexer (DWDM) systems. The system may employ[[s]] a dense array of high yield fixtures and an ion assisted movable dual electron beam evaporation system. The fixture array may increase[[s]] acceptable yields of narrow band pass filters to 25-75% compared to less than 5% in conventional coating systems used for DWDM. The movable e-beam system allows critical symmetry to be maintained while eliminating significant delays resulting from deposition of two materials from a single electron gun. The vacuum deposition system [[will]] may enable production of more than 15,000 50-200 GHZ filters which meet specifications for DWDM demultiplexers every 48 hours.

Replace paragraph [0003] **with:**

[0003] In at least one aspect, the ~~The~~ present invention relates to film deposition useful in the installation of a worldwide fiber-optic network, which is in progress, capable of handling levels of data transmission inconceivable only several years ago. As a result of this network, the Internet is less than half a decade away from being a more useful tool than the computers which navigate it. Advanced thin film coatings have emerged as the enabling technology to control transmission and reflection of selected wavelengths of light. From this, and other technical achievements, existing optical fibers will accommodate the increase in bandwidth that is required over the next 3-5 years.

Replace paragraph [0011] **with:**

[0011] In practice, tens of substrates (approximately 6" square) are coated with multilayer filters designed for DWDM in "traditional" IBSD or IAD systems. A typical IAD production coating system can be approximated by a 60" cube with a fixture assembly located at the top of the vacuum chamber as shown schematically in FIG. 1A. The planetary fixture assembly 34 is designed for thickness uniformity described above and can accommodate approximately sixteen (16) to twenty-four (24) 6" square or round

substrates. As many as five QCMs (quartz crystal monitors) and an optical monitor are positioned about the chamber to monitor deposition rate and optical layer thickness. The quartz monitors are calibrated prior to production. Deposition rate incident on the substrate assembly is determined by sampling each monitor and averaging.

Replace paragraph [0015] **with:**

[0015] A ~~high-yield high-throughput~~ vacuum deposition system has been designed that in one embodiment may be used for production of narrow band pass filters for use in mux and demux devices of DWDM systems. The filter production system may utilize[[s]] a high-yield fixture assembly ~~call~~ such as the Vornado™ and a novel moving electron gun assembly which in one embodiment allows symmetry between the substrates and deposition source to be maintained. With proper system calibration, and modifications to conventional vacuum deposition processes used to produce filters for DWDM components, the system is capable of yields greater than 25% and a production capacity of greater than 15,000 filters per deposition.

Replace paragraph [0030] **with:**

[0030] FIG. 2A shows one embodiment of the inventive deposition system with dual moveable e-beam evaporators; and,

Replace paragraph [0031] **with:**

[0031] FIG. 2B shows one embodiment of the inventive dense high yield fixture array.

Replace paragraph [0033] **with:**

[0033] FIGS. 2A and 2B show one embodiment of the inventive assembly, including evaporators 10, a source deposition location 12, a standby position 14, a fixed ion source 16, a vacuum chamber 18, fixed array 20, fixtures 22, substrate 26, disk 28, rotation mechanism 30, and QCM 32. The fixtures 22 are located in a dense high yield array 20, as shown in FIGS. 2A and 2B. The fixtures 22 are in close proximity to each other, in order to utilize as many substrates 26 as possible.

Replace paragraph [0034] **with:**

[0034] In one embodiment, an ~~An~~ ion assisted electron beam evaporation system has been configured to produce narrow band pass filters for DWDM multiplexers with high

throughput and maximum yield. The system significantly improves uniformity of coated substrates to enable increased output. The improvements to the conventional electron beam deposition system discussed herein can be implemented in any deposition system. For example, the improvements are suitable for ~~designed to produce~~ high performance filters such as for DWDM.

Replace paragraph [0042] **with:**

[0042] After completion of the layer all clam shutters 38 close and the electron gun 10 in the source deposition location 12 is shuttered and moves to the stand-by position 14. Simultaneously, the alternate gun 10 moves to the source deposition location 12 and the gun shutter (not shown) is opened. Each electron gun 10 uses a shuttered QCM (not shown) to sample evaporation before the clam shutters 38 are opened. The process is repeated until the desired filter is obtained. In one embodiment, total ~~Total~~ deposition time can range from 24-36 hours.

Replace paragraph [0044] **with:**

[0044] Having thus described several embodiments of the invention, it is now claimed: